AIM FOCUS PAPERS

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ASSOCIATION OF INDEPENDENT MUSEUMS
The National Body Connecting, Supporting and Representing Independent Museums
www.museums.org.uk/aim   **MARCH 2007**

ICT FOR MUSEUMS

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This paper is published by AIM in partnership with MDA

Information and Communications Technology (ICT) is a catch-all term which describes computers and the different ways they can be used to communicate with people, for example through email or the Internet.

ICT provides museums with a very powerful set of tools, both for the day to day work of managing a collection and for reaching out to your visitors, sometimes in new and interesting ways.

At the same time, ICT presents your museum with a challenge. It can be expensive, is sometimes unpredictable and it represents a long term commitment – you can't simply buy in the equipment and hope for the best.

Whether you are completely new to ICT or are looking to update your existing setup, this Information Paper is intended to act as your guide to some of the common questions and ideas which you are likely to encounter along the way.

PREPARING FOR ICT

Getting started with ICT

Getting involved in ICT is a big decision for your museum. Before you begin buying equipment and software, you should always take time to plan carefully and to equip yourself with all the information you are likely to need. Extra time spent in planning and preparation will save you weeks of work in the long run!

The biggest challenges with ICT have almost nothing to do with technology. They are really about what it means for your museum, how it is likely to change the way you work and how you will ensure that you get the best out of your investment of time, money and effort.

Whether you are buying in your first computer or specifying an entire network with file stores and printers, you will soon learn that every decision has an impact on every other. When in doubt, you should always stop and refer back to your plan to ensure that everything stays on track.

ICT and your museum

What does it mean for your museum to be using ICT? There are some questions to ask before you begin:

● Who is going to be using the computer?

● What areas of your work are you expecting to use ICT for?

● How much experience do you have with computers?

● Do you have a member of staff or volunteer who is able to offer technical support?

● Are you able to commit money and time to ICT on an ongoing basis?

You should be as realistic as you can. ICT is a long-term investment and requires ongoing support. You will very quickly get into difficulty if you haven't allowed for this. At the same time, ICT is only a tool. It may solve some problems and make some areas of your work easier, but it presents challenges of its own – you should never see it as a magic cure!

Roles and responsibilities

Getting the most out of your ICT is about working with people. You will need at least one person who will be the ambassador for ICT in your museum, and they will need to lead your colleagues through the necessary changes.

Using computers can be a very personal thing. Different people learn at different speeds – some of your colleagues will take to it like ducks to water, while others will take longer and have more problems. Computers can make people feel stupid and incapable and it is vital to ensure that everyone affected by ICT is given the support they need.

At the same time, learning to use ICT is a personal voyage of discovery and people often develop creative ways of doing things which can make everyone's life easier. It is worth getting everyone to share their insights and experience on an ongoing basis.

Specific roles and responsibilities you may want to think about are:

● ICT Ambassador – someone who is confident in using ICT and can encourage colleagues to get to grips with it*.

● ICT Manager – someone who is going to be responsible for decisions relating to your ICT.

● ICT Administrator – someone who will be responsible for the maintenance and management of your ICT.

● Technical Support – someone who can answer queries and help staff solve problems when they arise.

It is often useful to persuade a senior member of your organisation to be your Ambassador, particularly if they are involved in decisions about budgets!

Training

Training serves two important aims. The first is to equip museum staff and volunteers with the skills they will need to use ICT effectively. The second is to ensure that people feel supported in using ICT, and not that it is simply being foisted on them.

ICT training takes many forms, some of which can be very expensive indeed. Before you invest in training, you should think about who needs it, and what level of expertise they are likely to need to do their work effectively.

The best form of basic ICT training is the European Computer Driving Licence (ECDL). ECDL is a Europe-wide qualification and can be learnt in a classroom, from a book or sitting at a computer screen. The syllabus covers:

- Basic concepts of ICT.
- Using a computer and managing files.
- Word Processing.
- Spreadsheets.
- Databases.
- Presentations.
- Information and communication.

For further information about the ECDL, refer to the *Further Information and Resources* section at the end of this paper.

An ICT policy

Once you have thought about the likely implications of ICT for your museum, it is time to begin writing your ICT Policy. The ICT Policy is basically a written statement of how you are going to use ICT and what you are going to be using it for.

The exact content of the policy will vary from museum to museum, but some broad headings you may want to think about include:

- Statement of Intent – what you will be using ICT for.
- Roles and responsibilities for managing ICT in your museum.
- Provision of technical support.
- Specification for software (including operating system and productivity software – see page 4).
- How often you will plan to replace ICT equipment (a cycle of roughly 3 years is common).
- Annual budget for ICT equipment, training and support.
- Training for staff and volunteers in using ICT (for example through the ECDL).
- Internet and Email use policies (see page 7).

Buying ICT

The computer retail industry is worth millions of pounds each year, so there is no shortage of companies trying to sell you equipment. One computer is very much like another, so to create a healthy competition, retailers use often misleading information such as RAM or screen size to persuade you to buy their product. Couple this with the range of package and special offers and buying ICT can become a real headache.

The most important principle is to decide what you want to do with your computer, establish what software you will need to do it and then buy the computer that will let you run that software. You should never be seduced by special offers and packages – you'll always end up paying for it, whether in the form of cheaper components or shorter warranties.

Computer basics

A computer is a machine which accepts an input and provides an output based on a set of rules (the 'programme'). Modern computers can do this many millions of times a second, which is what makes them such powerful tools. The basic configuration for a computer is:

- Input device (such as a keyboard, mouse or joystick).
- The computer itself.
- Output device (such as a screen – usually called a 'monitor' – speakers or a printer).

Types of computer

There are four main types of computer, and the type you choose depends on whether you need to be able to move around with the computer and how powerful you need it to be. The types are:

- A server is a very powerful computer designed to act as the nerve centre of a network of less powerful ones. It is best to think of a server as like a telephone exchange – it receives information and decides where to send it based on a number of rules. A small organisation might have a single server, whereas larger ones can have entire rooms full of them (known as 'server farms').
- A desktop computer, with a keyboard and monitor – the computer is usually housed in a big box called a 'tower'. Desktops are usually (but not always) powerful and able to handle more complex tasks.
- A laptop computer – the computer, screen and keyboard are all built into a single hinged unit which can be closed and carried around. Laptops are designed to balance weight, battery life and performance, so they are usually good at office-type tasks but less good at demanding things like displaying pictures.
- A palmtop computer – a very small computer and screen with an integrated input device. A palmtop is usually around half the size of a standard paperback and is generally purpose-built for less intensive tasks.

What the words mean

When you are looking at buying a computer, a number of words and acronyms will come up time and again. The following is not intended to be a comprehensive glossary, but it will provide you with a guide to what to look out for.

- Processor (sometimes also referred to as a 'CPU'). The processor performs calculations, which are the basis of all software. Processors in general have become much faster in recent years, and there is less and less difference between them in terms of speed and performance.
- Operating System. Most modern computers come with an operating system pre-installed. The operating system is the basic set of instructions which coordinates the different parts of a computer to run software. Microsoft's Windows is the most popular operating system in the world, but others such as the more recent Linux are also gaining popularity.
- Memory (sometimes also referred to as 'RAM'). The memory is where the computer holds information while working on it. The more memory the computer has, the better it will be at running lots of different software at the same time.
- Hard Drive. The hard drive (or 'disk') is where your computer stores information when you aren't working on it. The bigger the hard drive, the more information you can store. Modern hard drives are rated in gigabytes (Gb) and sizes of anything between 80Gb and 250Gb are becoming standard.
- Graphic Card. A graphic card is a separate processor which is designed specifically to handle the kinds of calculations computers use to draw pictures on the monitor. Having a separate card reduces the strain on the main processor, and is a must if you are going to be using image or video.
- Sound Card. A sound card is a separate processor which is designed to perform the calculations which the computer uses to make noises (such as music or sound effects). Almost all modern computers are shipped with a sound card already included, but you should consider a separate card if you are going to need to play high-quality audio or video with a soundtrack.
- Optical Drive. Optical drives use a small, high-frequency laser to read information encoded on a spinning disk (such as a compact disk or DVD). Increasingly, optical drives will also allow you to write information onto a disk so that it can be carried around or transferred between computers.

How much should you pay?

You should expect to pay between £600 and £800 plus VAT for a stable, well-made computer that will handle almost all general office work and still be usable in 3 years time. Paying less than this tends to mean either that the performance will be lower or it will break down more quickly.

If you are looking for a computer that will handle more intensive tasks such as image or video editing, you should look to pay anything between £1000 and £1300 for a computer which includes a high-quality, dedicated graphics card.

Different ways of buying ICT

There are several common ways of buying ICT for your museum:

- From a shop. National chain stores are often able to offer good deals on computer equipment. Some, such as PC World

Business offer a free consultancy service which will help you to specify your network and other requirements.

- Direct purchase (online). Some high street shops add a premium of their own to the basic price of the equipment. By going to a direct reseller such as Dell, you can avoid paying this and also ensure that you get a system that is tailored to your needs.
- Leasing. If the upfront cost of buying a computer is prohibitive, you might want to consider leasing your equipment. Leasing can also be a good way of ensuring that your equipment is periodically updated without having to buy it from scratch.
- Through the Central Procurement Unit/Team of your Local Authority if you are a local authority-managed museum. Many such museums operate within an IT Policy defined by their Local or Borough Council. See the next section for further information on this.

However you buy your ICT, there are a few useful rules of thumb to remember:

- Always buy the best equipment you can afford.
- Be wary of bundles and packages, and never buy equipment for the free software or peripherals.
- Establish a relationship with your supplier – having a trusted partner with your ICT can deliver unexpected benefits and savings.

Working with a Local Authority IT Services Team

If your museum is part of or funded by a Local Authority, it is likely that your use of ICT will be defined by their overall Policy. This can sometimes be a frustrating process, particularly where the policy doesn't allow for some of the specific things a museum needs to be able to do, or where you need to make things happen quickly.

Local Authority IT Services and Procurement Teams are among the most legislated-for in the country. They have to balance an ever-increasing range of initiatives such as the National e-Procurement Framework against the needs of a range of different organisations in their remit. Although they can sometimes appear wantonly obstructive, you should always remember that you are only one of a number of conflicting demands which they need to balance within very restrictive budgets.

The best way to work constructively with an IT Services Team is to be very clear about what you want and why you want it. A well thought-out IT policy is often the key to achieving this, and it is often a good idea to share your policy with the relevant people while you are developing it.

Where there is an insurmountable conflict (as in the need to 'whitelist' particular email addresses so that you can participate in discussion lists – often censored by Local Authorities) you may have to accept the situation and find a workaround (such as establishing a non-LA email address for use with distribution lists).

Local Authorities tend to buy equipment on a lowest-tender consortium (batch) purchasing basis. Where you have a need which exceeds this specification (such as digitising your collection), it helps if you can be very clear about the exact specifications you will need to allow for.

Specifying your computers

Having decided what you want your computer to do, you will need to identify the software which does it. In the case of standard office tasks, this might be a set of products such as Microsoft Office which includes word processing, spreadsheets, databases, email and Internet as standard.

You will also need to think about whether the computer will need to run specialist software such as image editing or a Collections Management System. Finally, you will need to think about how you would like to use the computer to communicate – for example through the Internet or by email.

Bearing in mind the rapid pace of development in ICT, the following is a current baseline specification which will allow you to run most standard office software:

Processor:	Pentium 4 or AMD Athlon
Operating System:	Windows XP or XP Pro*
Memory:	512Mb
Hard Drive:	80-160Gb
Optical Drive:	DVD

Always check that the software you are buying is a genuine Microsoft product and ensure that it is properly licensed to your museum.

Futureproofing

There is a theory (called 'Moore's Law') which says that the processing performance of computers will double approximately every 18 months. Although this may be slowing as processors become ever more complex, it is a useful indication of how quickly things change in ICT.

There is no surefire way of ensuring that your equipment will not go out of date. You should always specify and buy the best system you can afford, and be wary of false economies. Both hardware and software can be updated, but this is often a costly and time-consuming process, and so should only be done in the context of a well thought-out strategy. It is always a good idea to think not only about your needs now, but also about how these needs might change over the next 2-3 years. Are you going to move location, or buy in a new documentation system? If you can foresee these things on the horizon, you should build them into your thinking about what to buy.
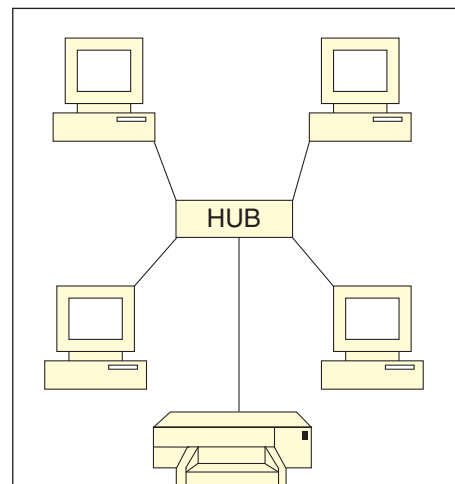
In a peer-to-peer network, all the computers are connected to each other through a central hub (sometimes called a 'switch'). They can all access a networked printer.
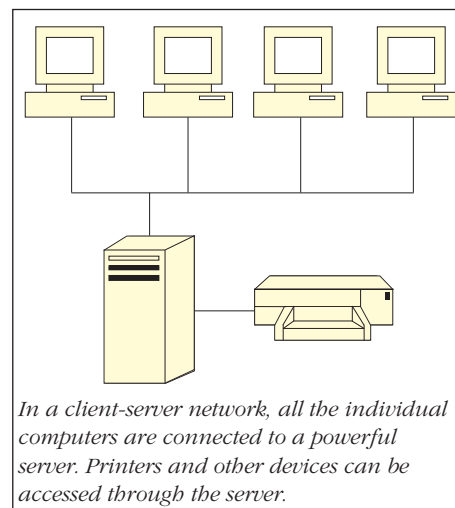
In a client-server network, all the individual computers are connected to a powerful server. Printers and other devices can be accessed through the server.

Thinking about a local area network

If you have more than one computer, you can join them together to create a Network. Networks are useful for several reasons. They let people share files between computers or use the same printer from different parts of the building. There are two main kinds of network:

Both of these kinds of network are called a Local Area Network. If you have up to four computers, you should consider a peer-to-peer network. Any more than this and you will want to think about a client-server network, which will help you manage different users.

Printers

Printers allow you to produce not only word-processed documents but also a whole range of printed material such as posters, pictures and leaflets. In recent years, the cost of printers has plummeted, but the cost of their ink has increased significantly. The main decision you will face when buying a printer is not the up-front cost, but how much it will cost you in the long-run.

There are two types of printer – Laser and Inkjet (dot-matrix printers are no longer common) – each of which offers their own advantages and drawbacks. When deciding what type of printer you need, you should ask yourself:

- Whether you need to print in colour or just black-and-white.
- How many people will be using the printer.
- The volume of printing (how many pages or documents you are likely to print in a month).
- Will the printer be networked or directly attached to a computer.

Generally, Laser printers are cheaper over their lifespan than Inkjet, particularly if you are only printing in black-and-white. Inkjet printers cost more, but are more likely to produce better results, particularly when printing in full colour (essential for high-quality photographs).

Monitors

The older Cathode Ray Tube (CRT) monitors have now been almost completely replaced by Thin Film Transistor (TFT – sometimes also known as 'flat screen' or 'active matrix'). TFT monitors have the advantage of taking up less space on your desk and are less susceptible to glare from room lighting and sunlight.

Monitors are usually sold by screen size (15″, 17″ and 19″ being the most common). Unless you are going to be using the monitor for detailed work such as image editing, you should opt for a 15″ or 17″ monitor from a known brand name such as Dell, Sony or Viewsonic. You do not need to pay too much attention to screen resolution unless you are working on graphics or the computer is likely to be used by someone with a visual impairment (although this can be allowed for using software).

Cheaper or unbranded monitors tend to be assembled from low-cost components and will not provide as good a picture or last as long. You should expect to pay between £100 and £160 (pus VAT) for a good-quality monitor.

Keeping your network healthy

ICT goes wrong. When you consider how much a computer is doing – handling billions of calculations a day – it is surprising that they don't go wrong more often. But go wrong they do, and when they do, they can bring your entire organisation to a halt.

Modern computers are shipped with pre-installed software which can perform sophisticated diagnostics and repair on themselves. The single best thing you can do to ensure a healthy computer is to shut it down properly at the end of the day and give it time to start up properly at the beginning. A few other simple things you can do include:

- Standardise software and operating systems.

- Coordinate updates so that all your computers are at the same 'status' at any given time.
- Prevent individual staff from downloading and running software of their own.
- Encouraging all staff to shut their computer down properly at the end of the day.
- Carrying out network-wide upgrades and updates out of office hours (such as at the weekend).

Backup

Whatever you do, at some point your network will fail. This is simply a fact of life and the most important thing you can do is to ensure that, when it does, you can get back up and running again quickly.

The most important thing is to establish a regular, scheduled backup (usually once every night) and ensure that you stick to it. Whether you are backing up data from a single computer or from many computers over a network, there are a number of approaches.

- External hard drive. These come in all shapes and sizes and connect to your computer or server through a high-speed connection such as USB2.0 or Firewire. Most ship with software which allows you to set up a regular scheduled backup which runs in the 'background', behind other things you are working on.
- Tape backup. Small and portable, backup tapes can be an excellent way of preserving your data. Tape devices range in format from DAT to DDS and DLT, but the most important factors are the capacity (how much information they can hold) and ease-of-use.
- Online backup. Online backup services such as IBackup are becoming increasingly popular. They tend to charge by the amount of data you are storing, and so grow with the needs of your museum.

Just as with your paper records, offsite storage is a fundamental principle with backup. There is no use having a regular backup if it goes up in flames along with your equipment. Always arrange to store backup media such as external hard drives, tape backups or disk media away from your museum (for most smaller museums, this tends to be the curator's house!)

Technical support

Some computer problems you will be able to fix yourself. Often, however, problems will arise from a combination of factors and you will need the services of a trained professional to diagnose and fix them – this is the role of Technical Support.

There are three main ways of organising technical support:

- As part of an ongoing contract with the supplier of your ICT.
- As part of the terms of the warranty under which your equipment is supplier.

- As an ongoing contract with a third party ICT services provider.

Many problems can be resolved without an engineer visiting your museum. If your computers or network are connected to the Internet, an engineer can log into them remotely, perform diagnostics and implement fixes. For this reason, technical support contracts are usually graded and include incremental costs:

- Telephone support – usually based on a per-minute premium call rate (which is why you may want to limit access for individual staff and choose to coordinate support requests through a single point instead).
- Remote support – usually based on a flat or per-hour fee structure.
- Onsite/callout support – often very expensive, this is usually based on a callout fee plus an hourly rate for each subsequent hour or part thereof.

Always remember that you can change your support contract, usually with no notice. It is generally a good idea to set up an ongoing telephone/remote support contract and then arrange for onsite support only in extreme circumstances. Remember that Technical Support providers may not be able to support some specialist software – refer to the section below on *Buying Software*.

Again, in the case of Local Authority museums, it is likely that your Procurement Unit/Team will have negotiated a standard support contract, and your access will be governed by this.

Health & Safety

The Workplace (Health, Safety and Welfare) Regulations 1992 and the Health and Safety (Display Screen Equipment) Regulations 1992 place an obligation on your museum to take reasonable steps to protect the Health & Safety of the staff when using ICT.

ICT Health & Safety should always be considered in the context of a proper Health & Safety Statement and Policy and as part of an ongoing Risk Assessment. Particular points you may wish to consider include:

- Location and placement of ICT equipment.
- Risk of trip hazards from wiring and equipment.
- Positioning and adjustability of monitors and peripherals.
- Recommendations for staff to take regular breaks from using ICT.
- Positioning and adjustability of seats and desks.
- Ventilation and lighting of work spaces.

Using a computer for protracted periods without a break can lead to or aggravate a range of complaints, from eyestrain to musculoskeletal problems, which can turn into long-term complications. Always take reports of aches or pains seriously and take steps to resolve them.

SOFTWARE

Software is what allows you to make use of your computer. Whatever it is designed to do, all software operates according to a common principle – they define a set of rules which tell the computer how to react in response to a particular input. In the case of Word Processing, for example, the software tells the computer to display a letter on the monitor when you press the corresponding letter on the keyboard.

Productivity software

'Productivity' software is the catch-all term for software which people use to carry out general office work. There isn't a standard definition, but the following types of software (usually called 'applications') are common:

- Word Processing – creating and editing documents such as letters or reports.
- Spreadsheets – creating lists of 'facts' such as numbers which can be used to perform calculations.
- Email client – writing, editing, sending and receiving emails as well as organising them into folders.
- Internet browser – requesting and displaying 'pages' from websites.
- Database – organising information into groups (called 'records') and manipulating them.

An important element is how well the different software works together. This is why software 'suites' such as Microsoft Office have become popular, since they emphasise the ability to transfer information between software applications.

Specialist software

Software can help you document and manage your collection, manipulate pictures, edit video, balance your books or keep your Christmas card list up to date. The world of software can sometimes seem like an impossibly confusing place!

The most important thing is to decide what you need to be able to do and then identify the software which will help you to do it. Always be wary of cheap or free software – if you are putting your museum in its hands then you need to know you can rely on it! Common types of specialist software include:

- Image editing software.
- Collections Management System (for keeping records about your collections).
- Content Management System (for allowing your staff to update your website).
- Contacts Management System (or Customer Relationship Management – CRM for short).
- Accounting software.

Your choice of specialist software will depend on what you need to do, but always take the time to check that you have the necessary hardware and operating system to run it.

Buying software

There are many different ways of buying software. Most commonly, it will come loaded onto a CD-Rom or DVD disk, in a box with a user manual and a registration form. Increasingly, however, software is downloaded from the Internet on a trial basis, with additional features or full access being unlocked when you buy a 'Registration Key' from the supplier.

It is always a good idea to standardise the software you will be using, so only one person in your museum should be authorised to buy software (preventing individual staff from buying-in software which might cause conflicts within your system).

It is common for publishers to produce regular upgrades to their software. You should always check the following when buying software:

- The terms of the license.
- The number of licensed users/computers*.
- Whether the license expires after a specified period.
- Whether the license gives you a right to receive upgrades on an ongoing basis.
- Whether technical support is included in the licensing cost.

*Licenses are often assigned on a per-computer (or per-processor) basis

Using Shareware and Freeware

New models of software distribution include:

- Shareware – this is software which is distributed free of charge but for which you will need to pay a small fee either after a specified period or to unlock additional features.
- Freeware – this is software that is distributed completely free of charge, but may be subject to other conditions (such as crediting the author, or not using it to make money).

Freeware and shareware are essential in keeping the software community active and innovative. However, you should consider very carefully before using it to deliver critical aspects of your work. Shareware and freeware can be less stable and often do not include any element of additional support.

Open Source software

The Open Source movement is a new way of thinking about software. At heart, it makes the underlying technology behind the software freely available, allowing anyone to edit and change it as long as they share their innovations with the rest of the people who are using it (the 'user community').

Open Source software is free of upfront costs, and hence is often appealing to museums. You should always remember that it is likely to cost just as much as full-priced software in the long run because you will almost certainly need to buy-in expertise to help you implement and build on it.

Open Source software is not inherently less stable than commercial products – indeed one of the world's most stable Operating Systems – Linux – is an Open Source system. Going Open Source is, however, a significant decision which will affect all areas of your ICT, and so one you should only take when you are confident about the subject.

COLLECTIONS MANAGEMENT

The majority of museums in the UK now use some form of electronic Collections Management System (CMS). A CMS can be an invaluable tool for simplifying the process of collecting and managing information about the objects in your care. The CMS can also often be used to create reports, catalogues and other documents which help people to find out more about your collections.

A CMS is only one part of a well thought-out approach to Documentation for your museum. It should never replace elements such as your Procedural Manual or other documentation systems, but should instead make the work of using them easier, faster and more productive.

Choosing the right system

There is no hard and fast rule to choosing the right Collections Management System. MDA provide advice to museums when going through this process, and you should always refer to them as a first port of call before investing time and effort in your procurement.

Particular things you will want to give some thought to are:

- How you will make the move from paper-based or ad-hoc systems (such as Foxpro) to a full CMS.
- Who will be using the system and what kind of training they will need.
- How many people will be using it and where from (eg. the store, the curators office etc.).
- Whether your collections have specific requirements (such as Natural History specimens).
- Whether you will want to allow people to search your records online.
- How much you can afford to spend (now and in the future).
- Compliance with the SPECTRUM standard as part of the Museum Accreditation Scheme.

Buying a Collections Management System

Once you have thought carefully about how a CMS will affect your organisation, the best thing you can do is talk to colleagues in other museums. You will quickly find that there are 8-10 common systems in use in museums,

and your colleagues will give you an honest assessment of their strengths and weaknesses.

If you are an Accredited museum (or are seeking Accreditation), you will need to ensure that your system is compliant with the SPECTRUM Standard. MDA works directly with the following MDA Partners to ensure that their systems are compliant:

- KE Software (KE Emu).
- DS Ltd (CALM).
- Adlib Systems.
- MODES.
- System Simulation (Index+).
- Willoughby.
- Zetcom.
- Gallery Systems (TMS/TMS Light).

For up-to-date information about SPECTRUM-compliant systems, visit http://www.mda.org.uk/software.htm.

GOING ONLINE

Once you have bought your equipment and software you can start using it to communicate. The Internet has seen an explosion in popularity over the past 5 years, to the point where it is now the first-stop for many people when looking for information, products or services.

With millions of users spending two hours or more online each day, it is easy to see why it has become so important for museums to have access to, and make the most of, the Internet.

The Internet

The Internet is a worldwide network of computers, connected through a series of hubs through which information flows like oil through a pipeline. The Internet is home to the World Wide Web – the websites and databases which contain billions of pages of words, pictures and every other kind of electronic media you can imagine.

Getting connected

Getting your computer connected to the Internet can seem complicated, but is really very straightforward when you know how.

It is useful to start by thinking about what it actually means to 'be online'. It is very similar to what happens when you make a telephone call. Your computer sends a request (something like 'I want to view this page of that website'). This request is sent in electronic form through fibre-optic cable to a server. The server (which can be anywhere in the world, as long as it is connected to the network) knows where that page is held and passes the request on to the computer that has it. The page is sent back to your computer and appears on your screen. It is one of the most remarkable things about the modern world that this exchange of request and answer can span the globe, but usually gives you an answer in a fraction of a second.

Up until 2 years ago, the most common way of getting online (and hence sending your 'requests') was dialup. This used a dedicated telephone line to open a connection to a server to send and receive requests. Dialup has several disadvantages. It ties up a telephone line, it is expensive and can be very slow.

More recently, governments throughout the world have invested millions in enabling Broadband. Broadband is a much faster way of connecting to the Internet, still using telephone wires, but in a way which does not tie up your telephone line. Unless your museum is in a very remote rural area, you will want to connect through ADSL Broadband.

Choosing a connection

There are many different kinds of Broadband connection, offering different speeds or lower costs if you also transfer your telephone service to the same provider. The kind of connection you choose will depend on the size of your museum, the number of users likely to be online at the same time and how much information they will be sending or receiving.

ADSL – It doesn't matter what ADSL stands for, but it is fast becoming the most common type of Broadband Internet connection for everyone (apart from very large businesses with hundreds of concurrent users, who would typically use an ISDN, T1 or 'leased' line). An ADSL connection has the following elements:

- A telephone line (your usual telephone line for the museum, usually provided by BT).
- A modem and router (usually in the same device) which connects to the telephone socket.
- Microfilters which you will need in order to plug telephones into your other telephone sockets*.

The microfilters are important because, although you can have computers and telephones attached to the same socket, they get confused unless you have a simple filter to identify which is which. You usually get two free when you buy your equipment, and additional ones only cost a few pounds each.

For more remote locations where ADSL is unavailable, there are several other solutions including Wideband, wireless and satellite connections. You will require specialist advice when considering these.

Once you have decided on your connection, you will need to find an Internet Service Provider.

Choosing an Internet Service Provider

What an Internet Service Provider does is slightly complicated, but it is best explained by saying that they give your museum an 'identity' for when you are online. This means that when you send requests to view pages, the server knows how to get them back to your computer. You can't use the Internet without an Internet Service Provider (ISP).

Internet Service Providers offer Broadband connections from between £10 and £20 per month, and it is well worth shopping around to get the best price. Some points you should always consider when approaching an ISP:

- Download speed (typically 512k, 1Mb or 8Mb – 1Mb is suitable for most small/medium-sized museums).
- Caps on the amount of data you can download (with additional charges or limited service above the cap).
- Contracts which tie you in for a fixed period (usually 12-24 months).
- Availability of dedicated technical support.
- Static IP address – essentially an identity which doesn't change, essential for some applications.

Some ISPs offer all-in-one packages which include telephone lines, web hosting and email accounts. Although these can seem initially appealing, they very often tie down your options in terms of software and Internet use. Always read small print carefully and take time to put together the package which best meets your needs.

Sharing a connection

If you have a Local Area Network, you can use it to let all of the computers on the network share the Broadband connection. This is the most cost-effective way of connecting an organisation to the Internet.

To share your Broadband connection, you will need the following basic equipment:

- Your modem and router (usually in the same device) which connects you to the outside world.
- A server or main computer connected to the router.
- 'Network' cards which plug into each computer on the network.
- Cables to connect the computers to the network.
- A 'firewall' which protects you from people trying to access your network via the Internet.

Wireless networks

Wireless networks can be a very useful way of sharing an Internet connection for museums – particularly if your museum is in a protected or listed building where it can be difficult to drill holes in the walls to install cables!

A wireless network works in almost exactly the same way as a 'wired' network, except that the router (plugged into the telephone socket) creates a short-range radio link to the computers.

Installing a wireless network so that it works properly in your building is a job for a professional, and you can get services such as PC World Business to design and install your

wireless network from £150 to £200 (plus equipment costs).

Safety and security

The Internet is sometimes compared to the Wild West. It isn't that bad, but you should be aware that criminals do operate online, as they do everywhere else, as there is a risk that they will gain access to your network and cause damage.

There are some standard principles which will help to keep your network secure:

- Read the manual carefully for any software that connects to the Internet. A lot of networks are vulnerable because people didn't delete key files or change default passwords after installation.
- Install and maintain a professional firewall, and take the time to learn how it works.
- Create alphanumeric passwords for all staff and ensure that they don't share them with each other or other people.
- Install and use Antivirus and Antispam software and ensure that it is regularly updated, particularly if some of your staff work from home or on laptops.
- Prevent staff from installing and running software of their own, and ensure that they do not click on suspect attachments in emails which can contain malicious software.

Ultimately, a determined hacker will compromise almost any system. Fortunately, they tend to focus on high-value targets such as banks and online shops, so the main thing you should think about is not leaving yourself open to threats through either ignorance or failure to take the basic steps.

Internet use policy

The Internet, as with almost any other publishing medium, has its good side and its bad side. As well as hugely valuable legitimate sites, there are countless others offering pornography or running elaborate scams. For the unwary, it can be all too easy to find yourself looking at inappropriate content.

The other danger with the Internet is that it can be fascinating. A key feature of its design is that one page will prompt you towards another, with the result that people can spend inordinate amounts of time just browsing.

For this reason, it is important that your museum's ICT Policy should include an Internet Use Policy which provides a clear statement of what is and isn't acceptable. It may seem unnecessarily formal, particularly for very small organisations, but it is well worth having in case a problem should ever arise. Key elements of an Internet Use Policy are:

- Statement that museum staff represent the museum while online in the same way as they do offline.
- Statement of whether personal use of the Internet is acceptable and at what times of day.

- Statement of what constitutes unacceptable use (eg. pornographic or defamatory content).
- Statement of penalty for misuse (eg. disciplinary measures).

EMAIL

Email ('electronic mail') has become one of the world's most popular forms of communication. Email uses the Internet to send and receive short messages through a special type of server called a 'mail server'.

Sending and receiving email

Before you can send and receive email, you will need a number of things:

- A mail 'client' – software which allows you to write and manage your messages, such as Outlook.
- An email 'address' – provided by your ISP or web host or a third party service such as Googlemail.
- A mail 'server' – either in your museum or provided by your web host or ISP.
- A 'spam' filter – see *Spam and Security* below.

Managing email for your museum

Email is a powerful tool for communicating with people and for allowing them to communicate with you. However, it does require careful management. Some points you should consider include:

- Whether you will have one 'address' for your museum (usually 'info@museumname.org.uk').
- Whether each individual member of staff/volunteer will have their own address.
- A convention for providing standard addresses (usually 'firstname.lastname@ museumname.org.uk').
- Whether you have enough staff/volunteers to respond quickly and effectively to messages.

Email use policy

The things you say in an email are legally admissible (an agreement made by email is legally-binding, for example), so you should ensure that your staff are aware of their rights and responsibilities when using email. It is always helpful to have an Email Use Policy which sets these out in detail.

Key elements of an Email Use Policy include:

- A statement that email is a legal document.
- A statement of what constitutes unacceptable use (eg. using email to distribute illegal, defamatory or discriminatory material).
- A statement of any disciplinary action likely to arise from misuse.

Spam and security

Spam is the name given to unsolicited email. It is a sad fact that spam now accounts for more than half of all email sent, and this shows few signs of abating soon.

There is nothing you can do to stop spam, but there is a lot you can do to reduce the amount of it that reaches your email inbox. Some simple measures include:

- Don't publish your email address on the Internet (criminals use software to go out and find email addresses on web pages), use a simple contact form instead.
- Install a spam filter (software which sits between your computer and the mail server and 'filters out' inappropriate messages based on keywords) and keep it up-to-date.
- Prevent your staff from responding to email circulars, bogus special offers and other forms of unsolicited mail (responding only proves that there is a 'live' address and triggers more spam).
- Prevent staff from responding to any email which invites them to click on a link and go online to update security information or passwords (known as 'phishing', this is one of the most common ways of getting hold of secure information fraudulently).

YOUR MUSEUM WEBSITE

Why have a website?

Now that you are an ICT expert, you are ready to take the next step and publish a website. However, before you do, you should always take the time to sit down with all of your staff and think about why it is you want one, and exactly what you expect it to do for you. Common reasons for building a museum website:

- To advertise the museum.
- To get more visitors.
- To provide information for schools when planning a visit.
- To allow a global audience to access information about your collections.

In some ways, it is best to think of having a website as being like opening a small television or radio station. It never turns off and requires an ongoing input of fresh, interesting content to ensure that people keep coming back. It is a big decision, so give yourself plenty of time to prepare before you make it.

Planning your site

Websites are exciting and interesting, and it is all too easy to get very involved in them and lose sight of the larger issues of how they will be maintained and how they will meet the needs of your audiences.

For this reason, it is essential to plan carefully for your website. Specific things you may wish to consider include:

- What your website is intended to achieve.
- Who the site is designed for.
- How the website will fit alongside your other forms of communication.

- Roles and responsibilities for managing the website.
- Design and branding.
- Your annual budget for the website.
- The Internet address for the website.

A final note

ICT is exciting and useful. It creates new opportunities and inspires new ways of working. At the same time, it can be expensive and unpredictable and is open to misuse. If you are going to get the most out of ICT, you have to take it seriously, both as an opportunity and a responsibility. We hope that this Information Paper has provided a useful introduction, but it has been necessarily brief about some complex issues. There are many excellent sources of advice about ICT, so always arm yourself with the best, most up-to-date information before you make any decision.

Enjoy!

FURTHER INFORMATION AND RESOURCES

The ICT hub

The ICT Hub is an essential resource for any museum. It provides in-depth, but clearly-written guidance on all of the areas covered in this paper and many more. As well as free online resources, you can access a dedicated telephone helpline and read case studies about how other people have got started with ICT.

http://www.icthub.org.uk

Collections Link

MDA is the UK's lead organisation for knowledge and information management in museums. Through the Collections Link service, they provide free access to expert advice on areas from buying a Collections Management System to writing your first Web Design Brief.

http://www.collectionslink.org.uk

ECDL

The European Computer Driving License is an international qualification which recognises IT-literacy and competence.

http://www.ecdl.com

Useful links

Other useful links include:

http://www.broadband.co.uk – A Beginner's Guide to Broadband, as well as a price-comparison for ISPs

http://www.tasi.ac.uk – An excellent introduction to the principles and practice of digitisation

http://www.ukoln.ac.uk – A guide to Managing Digital Projects and other resources

http://www.netmag.co.uk – Articles on web design and accessibility

http://www.howstuffworks.com – How everything from a mouse to a server works

http://www.w3c.org – Standards and protocols for ICT (intermediate to advanced)

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MDA is the UK focus for expertise in collections management. Our work in ICT is driven by a commitment to stable infrastructure and skills development which enables museum professionals to deliver excellent services to their users. We provide a range of advice, resources and training courses through our Collections Link advisory service. Further information: http://www.collectionslink.org.uk.

ICT For Museums